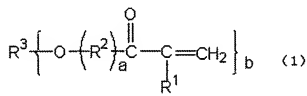
AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A photochromic lens substrate, which comprises a cured product of a polymerization curable composition comprising:

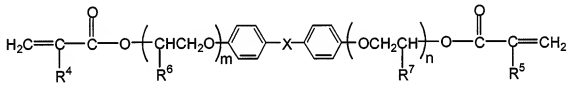
(I) a polyfunctional polymerizable monomer represented by the following formula (1):



(1)

wherein R^1 is a hydrogen atom or methyl group, the group $-R^2-$ is $-CH_2CH_2O-$, $-CH_2CH(CH_3)O-$ or $-C(=O)CH_2CH_2CH_2CH_2CH_2O-$, R^3 is a trivalent to hexafunctional organic residue, a is an integer of 0 to 3 and b is an integer of 3 to 6;

(II) a bifunctional polymerizable monomer represented by the following formula (2):



...(2)

wherein R^4 and R^5 are each independently a hydrogen atom or methyl group, R^6 and R^7 are each independently a hydrogen atom or alkyl group having 1 or 2 carbon atoms, the group $-X-$ is $-O-$, $-S-$, $-S(=O)_2-$, $-C(=O)-O-$, $-CH_2-$, $-CH=CH-$ or $-C(CH_3)_2-$, and m and n satisfy $(m + n) = 0$ to 30; and

(III) another polymerizable monomer different than the above polymerizable monomers (I) and (II), selected from the group consisting of polyethylene glycol methacrylate having an average molecular weight of 526, polyethylene glycol methacrylate having an average molecular weight of 360, methyl ether polyethylene glycol methacrylate having an average molecular weight of 475, methyl ether polyethylene glycol methacrylate having an average molecular weight of 1,000, polypropylene glycol methacrylate having an average molecular weight of 375,

polypropylene glycol methacrylate having an average molecular weight of 430, stearyl methacrylate, lauryl methacrylate, ethylene glycol glycidyl ether, propylene glycol glycidyl ether, tetraethylene glycol diacrylate, nonaethylene glycol diacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, tetraethylene glycol dimethacrylate, tripropylene glycol dimethacrylate, tetrapropylene glycol dimethacrylate, nonaethylene glycol dimethacrylate, nonapropylene glycol dimethacrylate, ethylene glycol bisglycidyl methacrylate, 1, 4-butylene glycol dimethacrylate, 1, 9-nonylene glycol dimethacrylate, neopentylene glycol dimethacrylate, polyallyl compounds, acrylate and methacrylate compounds, vinyl compounds, bifunctional to hexafunctional polymerizable polyurethane oligomers and bifunctional to hexafunctional polymerizable polyester oligomers;

(IV) a photochromic compound; and

(V) a thermal polymerization initiator,

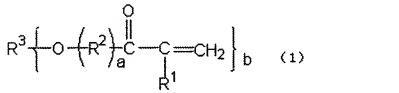
wherein the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 1 to 15 wt%, 10 to 80 wt% and 5 to 89 wt% based on the total of all the polymerizable monomers, respectively, the fading half-life period of the photochromic compound (IV) in the cured product is 30 times or less shorter than the fading half-life period of the photochromic compound (IV) in the polymerization curable composition, and said cured product has a tensile strength of 20 Kgf or more.

2. (Original) The lens substrate according to claim 1, wherein the bifunctional polymerizable monomer (II) is a combination of a first bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 0 to 5 and a second bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 6 to 30, and the molar amount of the second bifunctional polymerizable monomer is 3 times or less larger than that of the first bifunctional polymerizable monomer.

3. – 5. (Cancelled)

6. (Previously Presented) A polymerization curable composition for a photochromic lens substrate, the polymerization curable composition comprising:

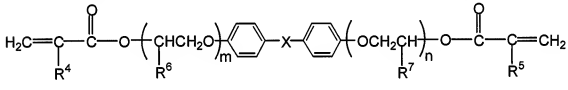
(I) a polyfunctional polymerizable monomer represented by the following formula (1):



(1)

wherein R^1 is a hydrogen atom or methyl group, the group $-R^2-$ is $-CH_2CH_2O-$, $-CH_2CH(CH_3)O-$ or $-C(=O)CH_2CH_2CH_2CH_2CH_2O-$, R^3 is a trivalent to hexafunctional organic residue, a is an integer of 0 to 3 and b is an integer of 3 to 6;

(II) a bifunctional polymerizable monomer represented by the following formula (2):



...(2)

wherein R^4 and R^5 are each independently a hydrogen atom or methyl group, R^6 and R^7 are each independently a hydrogen atom or alkyl group having 1 or 2 carbon atoms, the group –X- is –O-, -S-, $-S(=O)_2-$, $-C(=O)-O-$, $-CH_2-$, -CH=CH- or $-C(CH_3)_2-$, and m and n satisfy (m + n) = 0 to 30;

(III) another polymerizable monomer different from the above polymerizable monomers (I) and (II), selected from the group consisting of polyethylene glycol methacrylate having an average molecular weight of 526, polyethylene glycol methacrylate having an average molecular weight of 360, methyl ether polyethylene glycol methacrylate having an average molecular weight of 475, methyl ether polyethylene glycol methacrylate having an average molecular weight of 1,000, polypropylene glycol methacrylate having an average molecular weight of 375, polypropylene glycol methacrylate having an average molecular weight of 430, stearyl methacrylate, lauryl methacrylate, ethylene glycol glycidyl ether, propylene glycol glycidyl ether, tetraethylene glycol diacrylate, nonaethylene glycol diacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, tetraethylene glycol dimethacrylate,

tripropylene glycol dimethacrylate, tetrapropylene glycol dimethacrylate, nonaethylene glycol dimethacrylate, nonapropylene glycol dimethacrylate, ethylene glycol bisglycidyl methacrylate, 1, 4-butylene glycol dimethacrylate, 1, 9-nonylene glycol dimethacrylate, neopentylene glycol dimethacrylate, polyallyl compounds, acrylate and methacrylate compounds, vinyl compounds, bifunctional to hexafunctional polymerizable polyurethane oligomers and bifunctional to hexafunctional polymerizable polyester oligomers;

(IV) a photochromic compound; and

(V) a thermopolymerization initiator,

wherein the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 1 to 15 wt%, 10 to 80 wt% and 5 to 89 wt% based on the total of all the polymerizable monomers, respectively, the fading half-life period of the photochromic compound (IV) in the cured product is 30 times or less shorter than the fading half-life period of the photochromic compound (IV) in the polymerization curable composition, and a cured product of said polymerization curable composition has a tensile strength of 20 Kgf or more.

7. (Original) The composition according to claim 6, wherein the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 3 to 10 wt%, 20 to 60 wt% and 30 to 77 wt%, respectively.

8. (Original) The composition according to claim 6, wherein the bifunctional polymerizable monomer (II) is a combination of a first bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 0 to 5 and a second bifunctional polymerizable monomer of the above formula (2) in which (m + n) is 6 to 30, and the molar amount of the second bifunctional polymerizable monomer is 3 times or less larger than that of the first bifunctional polymerizable monomer.

9. – 11. (Cancelled)

12. (Original) A photochromic lens which comprises the photochromic lens substrate of claim 1, a hard coat layer and a buffer layer, said buffer layer being interposed between the hard coat layer and the substrate and having lower pencil hardness than the hard coat layer, for bonding the substrate to the hard coat layer.

13. & 14. (Cancelled)

15. (Currently Amended) The photochromic lens substrate of claim 1,

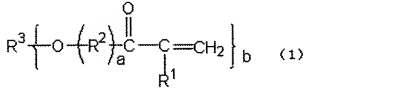
wherein the polyfunctional polymerizable monomer represented by formula (1) is at least one selected from the group consisting of trimethylolpropane trimethacrylate, trimethylolpropane triacrylate, tetramethylolmethane trimethacrylate, tetramethylolmethane triacrylate, tetramethylolmethane tetramethacrylate, tetramethylolmethane tetraacrylate, trimethylolpropane triethylene glycol trimethacrylate, trimethylolpropane triethylene glycol triacrylate, ethoxylated pentaerythritol tetraacrylate, ethoxylated pentaerythritol tetramethacrylate, pentaerythritol trimethacrylate, pentaerythritol tetramethacrylate, caprolactam modified ditrimethylolpropane tetraacrylate, caprolactam modified ditrimethylolpropane tetramethacrylate and caprolactam modified dipentaerythritol hexaacrylate, and

wherein the bifunctional polymerizable monomer represented by formula (2) is at least one selected from the group consisting of:

2,2-bis[4-(methacryloyloxypolyethoxy)phenyl]propane (average value of (m + n) is 2),
2,2-bis[4-(methacryloyloxypolyethoxy)phenyl]propane (average value of (m + n) is 2.6),
2,2-bis[4-(methacryloyloxypolyethoxy)phenyl]propane (average value of (m + n) is 4),
2,2-bis[4-(methacryloyloxypolyethoxy)phenyl]propane (average value of (m + n) is 10),
2,2-bis[4-(methacryloyloxypolyethoxy)phenyl]propane (average value of (m + n) is 30),
2,2-bis[4-acryloyloxypolyethoxy]phenyl]propane (average value of (m + n) is 4),
2,2-bis[4-methacryloyloxypolypropoxy]phenyl]propane (average value of (m + n) is 4),
2,2-bis[4-methacryloyloxypolypropoxy]phenyl]propane (average value of (m + n) is 10),
bis[4-methacryloyloxypolyethoxy]phenyl]methane (average value of (m + n) is 4), and
bis[4-methacryloyloxypolyethoxy]phenyl]sulfone (average value of (m + n) is 4).

16. (Previously Presented) A polymerization curable composition for a photochromic lens substrate, the polymerization curable composition comprising:

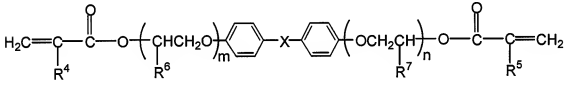
(I) a polyfunctional polymerizable monomer represented by the following formula (1):



(1)

wherein R^1 is a hydrogen atom or methyl group, the group $-R^2-$ is $-CH_2CH_2O-$, $-CH_2CH(CH_3)O-$ or $-C(=O)CH_2CH_2CH_2CH_2CH_2O-$, R^3 is a trivalent to hexafunctional organic residue, a is an integer of 0 to 3 and b is an integer of 3 to 6;

(II) a bifunctional polymerizable monomer represented by the following formula (2):



...(2)

wherein R^4 and R^5 are each independently a hydrogen atom or methyl group, R^6 and R^7 are each independently a hydrogen atom or alkyl group having 1 or 2 carbon atoms, the group –X- is –O-, -S-, $-S(=O)_2-$, $-C(=O)-O-$, $-CH_2-$, -CH=CH- or $-C(CH_3)_2-$, and m and n satisfy (m + n) = 0 to 30;

(III) another polymerizable monomer different from the above polymerizable monomers (I) and (II), selected from the group consisting of polyethylene glycol methacrylate having an average molecular weight of 526, polyethylene glycol methacrylate having an average molecular weight of 360, methyl ether polyethylene glycol methacrylate having an average molecular weight of 475, methyl ether polyethylene glycol methacrylate having an average molecular weight of 1,000, polypropylene glycol methacrylate having an average molecular weight of 375, polypropylene glycol methacrylate having an average molecular weight of 430, stearyl methacrylate, lauryl methacrylate, ethylene glycol glycidyl ether, propylene glycol glycidyl ether, tetraethylene glycol diacrylate, nonaethylene glycol diacrylate, diethylene glycol dimethacrylate, triethylene glycol dimethacrylate, tetraethylene glycol dimethacrylate,

tripropylene glycol dimethacrylate, tetrapropylene glycol dimethacrylate, nonaethylene glycol dimethacrylate, nonapropylene glycol dimethacrylate, ethylene glycol bisglycidyl methacrylate, 1, 4-butylene glycol dimethacrylate, 1, 9-nonylene glycol dimethacrylate, neopentylene glycol dimethacrylate, polyallyl compounds, acrylate and methacrylate compounds, vinyl compounds, bifunctional to hexafunctional polymerizable polyurethane oligomers and bifunctional to hexafunctional polymerizable polyester oligomers;

(IV) a photochromic compound; and

(V) a thermopolymerization initiator,

wherein:

the amounts of the polyfunctional polymerizable monomer (I), the bifunctional polymerizable monomer (II) and the other polymerizable monomer (III) are 1 to 15 wt%, 10 to 80 wt% and 5 to 89 wt% based on the total of all the polymerizable monomers, respectively;

the fading half-life period of the photochromic compound (IV) in the cured product is 30 times or less shorter than the fading half-life period of the photochromic compound (IV) in the polymerization curable composition;

a cured product of said polymerization curable composition has a tensile strength of 20 Kgf or more; and

the polyfunctional polymerizable monomer represented by formula (1) is at least one selected from the group consisting of caprolactam modified ditrimethylolpropane tetraacrylate, caprolactam modified ditrimethylolpropane tetramethacrylate and caprolactam modified dipentaerythritol hexaacrylate.